

A

NEW METHOD OF TREATING STERILITY,

BY THE

REMOVAL OF OBSTRUCTIONS OF THE FALLOPIAN TUBES.

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NEW METHOD OF TREATING STERILITY.

IN a Lecture published in *THE LANCET* of September 16th, 1848, (vol. ii. 309,) I refer to the variety of sterility dependent on the state of the Fallopian tubes, and I observe that "I have recently devised and performed an operation connected with these tubes, for the removal of sterility." My proposal to explore the Fallopian tubes* was somewhat prematurely criticized in the *British and Foreign Medico-Chirurgical Review* for January, 1849, and this criticism, by a writer whom I nevertheless hold in the highest respect, it was, which mainly induced me to delay the publication of a paper I had prepared, describing the operation, and the instruments used in its performance. In the meantime I continued to mature the operation, and made no secret of the matter to any of my friends. But the subject has since been referred to, incidentally, in such a way that I feel I ought not longer to delay placing it before the profession. In a paper on sterility the result of ovarian disorder, read by Dr. Tilt, at the Westminster Medical Society, at the meeting of April 28th, the question of deobstructing the Fallopian tubes

* It is now nine months since I performed the first operation on the Fallopian tubes. I mention this fact at the commencement, to show that I have not been in rash haste to publish upon the matter. At every step I have taken respecting it, I have endeavoured to exercise the utmost caution.

was mooted. The following is the report of a portion of Dr. Tilt's paper, at the reading of which I regret I was not present:—"This imperfection (sterility) was the result (among other causes) of lesions in the tube destined to convey the ovula to their uterine abode. He likewise stated that sterility was sometimes produced by the uterine extremities being blocked up by a glutinous deposit, and asked—whether there was any possibility of doing for these organs what Maekintosh and Simpson have done in similar cases of temporary occlusion of the neck of the womb." I perfectly agree with Dr. Tilt respecting the existence of this form of sterility, and it will be seen that I had by anticipation answered his question in the affirmative, though of course I presume that of this Dr. Tilt had no knowledge whatever.

Perhaps I cannot do better than state the way in which I was led to entertain the practicability of obstructing the Fallopian tubes. In January, 1847, I was consulted by a lady who had been married twelve years, to a husband in good health, without having borne any children. As a large property and a title depended upon her having offspring, her presumed sterility was a source of great anxiety; producing more conjugal unhappiness and dissension than can well be described. The lady was in good health, the catamenia were regular, and there was no uterine or ovarian disorder sufficient to prevent impregnation. This I ascertained by the most careful examination. It occurred to me, in treating this case, as it must have occurred to many others under similar circumstances, that some Fallopian impediment to the descent of the ovulum, or the ascent of the spermatic particles, might exist, as the cause of the infecundity. As the case was important, I took the opinions of two or three eminent obstetric physicians as to the possibility and safety of exploring the tubes, but I met with so much discouragement that I did not then attempt it. If I listened to the same authorities, now that I have surmounted the difficulty, I should still desist from publishing any account of the operation, but it seems to me right, and a duty, that I should do so. The lady I have referred to left London after undergoing the ordinary treatment without any subsequent success. From this time, however, I began to entertain the possi-

bility of reaching the Fallopian tubes, so as to render them objects of curative treatment.

Pursuing my inquiries, I learnt that one of our most distinguished obstetric physicians, and also an eminent surgeon of the metropolis, had separately tried to devise an operation for the debobstruction of these tubes. The first, by passing a small bougie in at the os uteri, and attempting in this way to direct it towards the mouth of the tube; the second, by proposing to obtain a sight of the uterine extremity of the tube by the aid of my friend Mr. Avery's very ingenious lamp and reflecting tubes. I believe both attempts were quite unsuccessful.

There is an operation of Gairal, a French surgeon, a modification of catheterism of the Eustachian tube, consisting of the introduction of a fine whalebone bougie through the Eustachian tube into the cavity of the tympanum, which I had often performed, and which it seemed to me might be made applicable to the Fallopian tubes. In this operation the Eustachian catheter is passed to the guttural extremity of the Eustachian canal, and then a whalebone bougie, quite flexible from its fineness, is passed through the catheter and the Eustachian tube into the tympanum. When the bougie has been passed, it can be seen through the semi-transparent membrana tympani. Gairal's operation was used to dislodge thickened mucus from the tube, to dilate contractions, or to stimulate the mucous membrane in unhealthly states of the tube.

The following is the manner, accompanied by all the cautions I could devise, in which I determined the practicability of the Fallopian operation. I procured the uterus and appendages from a subject who had never conceived, and having first divided the uterus into two symmetrical halves, I moulded a small tube of flexible silver into such a shape, that when passed through the os uteri, it pointed accurately to the uterine mouth of the Fallopian tube on one side. It was necessary to arrange the tube so that it should pass through the os and cervix uteri in the undivided organ, and not only point towards the Fallopian angle of the uterus, but also direct a fine fibre passed into the silver tube, in the line of the Fallopian canal. The proper shape was obtained by a short abrupt curve at the extremity of the catheter. After

this I ascertained, by trying the tube thus bent, upon a perfect uterus, that it could be passed with ease into the uterine cavity, directed towards the orifice of the Fallopian tube, and withdrawn again from the uterus. I next ascertained the calibre of the canal of the Fallopian tube, by using fine wires of different sizes; and having prepared a whalebone bougie of the proper fineness, I found it could be directed with the utmost accuracy towards and into the Fallopian tube. The Fallopian angle of the uterine cavity is so acute, and the internal surface so smooth and dense in this situation, that it is almost impossible for the whalebone fibre to miss the tube. This readiness of the passage of the bougie is favoured by the anatomical shape of the uterine cavity. In the middle of the triangular cavity of the upper part of the uterus, the anterior and posterior walls project so as to touch, or nearly to touch, each other; but, from the orifice of the cervix to the Fallopian tubes on each side there are two lateral sulci, or grooves; and there is also another groove, extending at the fundus uteri from one Fallopian tube to the other. This triangular sulcus thus surrounds the promontories in the anterior and posterior uterine walls. The groove at the fundus is very useful in directing the beak of the catheter to the Fallopian orifice. Of course it is necessary to have two silver tubes or catheters, one for the left, the other for the right Fallopian canal.

After making these preparatory observations on the uterus and Fallopian tubes, when removed from the body, it became necessary to alter the apparatus so as to suit the living subject. The only modification necessary was to adapt the tube or catheter to the large curve described by the vagina and the uterus. For this purpose I had an instrument made by Mr. Thompson, of Windmill-street, having the curve of the uterine sound to adapt it to the uterus and vagina, and an additional lateral curve at the extremity, turning towards the Fallopian tube. When completed, this instrument was not so large as the uterine sound, or the intra-uterine pessary. The whole of the uterine length of the catheter was graduated so as to measure the depth of the uterine cavity. I also had a fine whalebone bougie, very flexible at the extremity, and graduated at the handle like Gairal's bougie, in order to show

the depth to which the extremity enters the Fallopian tube. The important point, it will be seen, was that of obtaining a directing-tube, accommodating itself to all the different curves of the sexual canal.

Two of the woodcuts which follow give front and side views of the Fallopian catheter, reduced in size,—the first showing the utero-vaginal curve, the second, the Fallopian curve of the instrument. The other two figures represent the whalebone bougie, also reduced.

An opportunity soon presented itself, and I attempted the operation on the living subject. The patient was about twenty-five years of age, the uterus had never been impregnated, and was in the normal situation. I mention this, lest it should be supposed to have been a case of prolapsus, in which the operation would of course be more easy and simple. Having lodged the os uteri in one of Mr. Fergusson's specula, I first passed the uterine sound to the fundus uteri, so as to assure myself that no uterine impediment existed; after this, I passed in the Fallopian catheter very readily, and directed it towards the left Fallopian orifice. Steadying the catheter in this position with the left hand, I introduced the whalebone fibre through the catheter, and into the Fallopian tube, for about an inch and a half, with the greatest ease,—indeed, I was surprised at the ease with which it passed; but this I attributed to the great care I had taken in maturing my plan beforehand. I withdrew and re-introduced the bougie several times, without producing any pain or uneasiness whatever. In fact, the only difficulty met with was in passing the sound through the constricted portion of the cervix uteri.

In the operation upon the Fallopian tube, the patient was not at all conscious of any sensation of any kind, more than from the ordinary specular examination. I found it easier of performance upon the living than the dead subject; or rather, I was able to pass a larger bougie than would have entered the Fallopian tube of the preparation. From my subsequent observations, I have no doubt whatever that the calibre of the tube is greater in the living than in the dead, owing to the contraction which occurs in the tissues of the latter. I have now performed the operation repeatedly, in the same manner, without pain or difficulty, or any subsequent incon-



venience whatever, so far as the mouths of the tubes are concerned. When the tubes are not imperforate, they can, with due care, be readily operated upon, if the sound can be passed to the fundus uteri. Of course it is necessary that the operator shall be familiar with the use of the speculum, so as to command the os uteri with ease; and the uterus must not be materially displaced, otherwise the utero-vaginal curve of the instrument will not be adapted to the curve of the organs themselves. Where any difficulty is experienced, it will not be at the Fallopian tubes themselves, but before reaching these organs. This is in consequence of the very different state of the vagina and the os and cervix uteri in different women. The os uteri and the uterine cavity should be in a healthy state at the time of the operation.

One word as to any supposable ill results from the new operation. I have not observed any bad symptom whatever which could fairly be attributed to it. Nor are any, as I believe, to be expected, in careful hands, if we throw aside the nameless fear which always attaches to any attempt to deal with organs hitherto sacred to the touch of the medical practitioner. As regards the uterus, the operation is less formidable than the passage of the full-sized uterine sound; the dilatation of the os uteri by the dilators in common use among obstetricians; the introduction of medicated bougies into the cavity of the uterus, and many other applications of obstetric surgery to this organ. As regards the Fallopian tube, though the bougie is calculated to remove obstructions, it is too flexible to injure the very dense structure of the uterine extremity of the tube. Any irritation it can produce, if used with caution, is inconsiderable, when compared with the monthly irritation to which these tubes are subject physiologically. As regards the peritonæum, there can be no danger whatever of peritonitis, as it is not proposed to approach the fimbriated extremities of the tubes, where the lining membrane becomes continuous with the peritonæum. It is in the narrow portion of the oviducal canals, near the uterus, where the removable obstructions occur. But the best answer to hypothetical objections of this kind which are sure to be raised is, that in practice no peritonæal disturbance has ever followed the operation. At the same time, I would urge great caution in the performance of the

operation, particularly by those who are not accustomed to the use of the speculum and the actual treatment of uterine disorders.

On considering the subject, it appears to me extraordinary that the Fallopian tubes have not been brought within the province of remedial manipulation before. It is the characteristic of modern surgery to penetrate more and more into the recesses of the body. We have operations upon the Stenonian ducts, upon the lachrymal ducts, and upon the Eustachian tubes, quite as delicate as that which I have now described upon the Fallopian tubes. Surgery has long since applied itself successfully to the urethra, the rectum, the trachea, and the œsophagus. I can only account for the neglect of the Fallopian tubes, because of their depth from the surface; but, by the speculum, the os uteri is, in effect, brought to the surface of the body; and the distance from the os uteri to the mouth of the tubes is short, and without any material impediment.

In a future communication, I propose to give some further particulars respecting the operation, and its application in practice, but particularly with reference to the removal of sterility by deobstructing the Fallopian canals at their narrowest and uterine portion. I do not mean to assert that obstruction or occlusion of the Fallopian tubes is the most prevalent cause of sterility, but it must undoubtedly be a common cause of this affection. No one conversant with the anatomy of the generative canal can doubt that a small plug of inspissated mucus or coagulum may occasion barrenness. I believe the operation I have described ought, where there is no special contra-indication or difficulty, to be cautiously performed in all cases where there is the desire of offspring, and where the sterility is not remediable by ordinary measures.

SINCE my former paper on this subject, I have received many communications respecting the new operation, and I beg to make a few further observations upon it. There is scarcely a single author of repute who does not refer to obstructions of the Fallopian tubes as a cause of Sterility, but no one has hitherto suggested any feasible remedy. These facts alone

must be sufficient to demand attention to any means calculated, like that which I have proposed and practised, to remove this impediment to conception. The following quotations will show that I did not, in my former communication, overrate the importance of Fallopian obstruction as a cause of barrenness:—

Dr. Fleetwood Churchill, in his work on Midwifery, gives a prominent place to obstructions of the Fallopian tubes in his account of the causes of sterility. He says,—

“The Fallopian tubes may be congenitally deficient, or imperforate, though such cases are extremely rare. Their canal may be obliterated from acute or chronic inflammation, or their fimbriated extremities may become adherent to the ovaries. *Even though not imperforate, yet the canal may be filled with adventitious matter.* In all these cases sterility is the consequence, because the access of the spermatozoa to the ovary is prevented.”

Dr. Copland refers sterility to “occlusion of the Fallopian tubes” as one cause. He goes on to observe,—

“*The openings of the Fallopian tubes may be also closed by a membranous production, or by an albuminous exudation from the internal surface of the uterus.* The tubes may be either partially or entirely obliterated, in consequence of the extension of inflammatory action to them from the uterus or adjoining parts. When these alterations extend to both tubes, sterility must necessarily result.”

In another passage, Dr. Copland is equally clear upon this point.

“Leucorrhœa is a cause of sterility chiefly when it depends upon inflammatory irritation of the internal surface or neck of the uterus, or when the secretion proceeds from relaxation of the vessels in this situation. When it is a consequence of inflammatory action, sterility may continue after the discharge has ceased, owing to organic changes in the surface of the uterus, or in the Fallopian tubes, especially the formation of a false membrane in the former, and the production of an albuminous exudation in the canals of the latter, or consequent obliteration of them.”

Mr. Whitehead, of Manchester, the most recent writer on the subject of Sterility, when speaking of the causes of this

defect, and more particularly of inflammation of the lining membrane of the uterus, remarks, that—

"The diseased condition of the lining membrane of the uterus may be extended to the Fallopian canals, *obliterating for the time their internal orifices*, so as to oppose an insurmountable obstacle to the admission of the spermatic fluid within them, and thus to render the fertilizing effort abortive."

Dr. Hamilton speaks of mechanical obstructions as a cause of sterility in the following terms:—

"In some cases, *inaptitude to conceive depends upon some state of the passages to the womb which act mechanically*, and may be removed by a surgical operation. It is obvious that such cases do admit of a remedy; and accordingly, it is well known to practitioners, that sometimes the efforts of the constitution remove these causes, for instances every now and then occur where married women become pregnant at the distance of several years after marriage."

Many other authors might be quoted to the same effect, but it is unnecessary, as the reality of this cause of sterility cannot be disputed for a moment. But I have no wish to attach undue importance to Fallopian obstructions, and to prove this, I give the following very brief sketch of the various causes of sterility. To get a clear and practical notion of sterility, we must consider the generative apparatus in the female, as one tube, extending from the ovary to the os externum, the perfect permeability of which at every point is absolutely essential to impregnation.

In treating of the causes of sterility, it is also convenient to consider the uterus as a middle point, towards which the spermatic particles of the seminal fluid of the male have to approach from the ostium vaginae on one side; and into which the ovules matured in the ovaria have to descend through the Fallopian tubes. The absolute conditions of fecundity are, that the male seminal fluid and the ovulum shall be healthy, and that free ingress and egress for the male and female elements of reproduction, through the generative canal, shall be provided for; and further, that the state of the entire generative tube shall be such as not to injure the ovulum or the spermatic particles. The uterus, also, must be in a state fitted for the reception and attachment of the impregnated ovule.

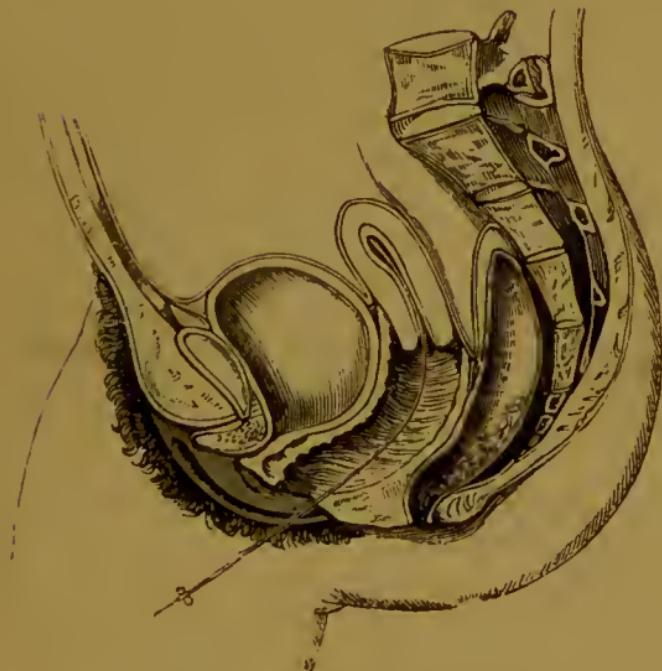
Infecndity is the necessary and inevitable consequence of failure in any one of these particulars. Into the causes of an infertile state of the spermatic fluid in the male, I do not propose to enter; but when virile, its access to the uteris may be prevented by impediments in the vagina, such as atresia; or by imperforation of the hymen; by obliteration, or occlusion of the os uteri; or by occlusion of the canal of the cervix by stricture, or the uterine discharges; or, lastly, the spermatic particles may be destroyed by a morbid condition of the uterine and vaginal discharges. On the other hand, the ovaria may not be in a condition to produce healthy ovules, either from a state of ovarian anaemia or hyperæmia, both of which are revealed by their appropriate symptoms of amenorrhœa or dysmenorrhœa. Or, again, the ovulum being eliminated in a healthy condition, from the ovaria, may be discharged through the Fallopian tubes with such rapidity that it has disappeared altogether from the sexual canal before the completion of the catamenial flow. Or, again, the results of subacute inflammation may have thickened the peritoneal covering of the ovaria, so as to render the extension of ova difficult or impossible: to this form of sterility Dr. Tilt has directed the attention of the profession. The ovule also, like the spermatozoids, may be destroyed by the condition of the secretions in the Fallopian canal, before impregnation has taken place.

The uteris, as I have said, may not be in a condition to receive and retain the unimpregnated ovule. The ovarian irritation accompanying the maturation and discharge of the ovule may be so great as to excite the uterus so much that it secretes the membranous exudation found in some cases of dysmenorrhœa, and which is fatal to impregnation. Lastly, there may be mechanical impediments to the passage of the ovule from the ovaria to the uterus through the Fallopian tubes. There may be obliteration and adhesion of the ovarian extremities of tubes to the ovaria; or there may be simple occlusion of the uterine extremity of the tube, so as to prevent both the ascent of the spermatic particles and the descent of the ovule. This part of the generative canal is of especial importance, as it is the narrowest portion, the point where the slightest impediment must necessarily produce sterility. A

plug of hardened mucus of the most insignificant character—the merest *débris* of the Fallopian secretion—may cut off an illustrious race, or change a dynasty. It is to this cause of sterility, which I believe to be very common, and easily and safely remedied, that I wish to direct special attention.

Many of the other causes of sterility which I have enumerated, are severe affections, which force themselves on the attention of the practitioner. But we find in practice that in the great majority of cases of sterility, there is a good state of health, the uterine secretion appears regularly, and there is neither appreciable pain nor disease in any of the reproductive organs. The mere absence of childbearing, all the conditions of fertility being apparently present, is the only symptom. This is, in fact, a reason why a vast number of cases never come under medical treatment at all. I submit, that in these cases of good health combined with sterility, the defect can only arise from some mechanical impediment, such as may be remedied by Fallopian catheterism. We sometimes see these cases after years of barrenness, suddenly, and without any apparent cause, give way, and the subjects of them bear children. Such cases are, I have no doubt, cases of Fallopian impediment, relieved, at length, by accident, but which might have been remedied long before by art. In many cases, this form of sterility continues unrelieved, until after the decline of menstruation, when childbearing is impossible. I have no doubt I shall be able, hereafter, to publish numerous cases of success by my method. But sterility is not like blindness or deafness, in which the result of an operation is seen at once. Time is required even after the removal of all impediment. At present, the time which has elapsed since I first performed the Fallopian operation upon sterile subjects, is not sufficient to show the results; but I have already had one case, in which, after several years of sterility, impregnation took place, but which was followed by abortion at the third month.

The following woodcuts give, the first a front, and the second a side, view of the vagina, uterus, and Fallopian tube, with the instruments used in the operation, *in situ*. They convey a better idea of the operation than the former representation of the instruments alone.



I find that different opinions are held respecting the practicability of the operation. Some consider it a very easy and trifling affair; others hold it to be quite impracticable. With reference to the possibility of performing the operation, I may quote the following observations by the editor of the *London Journal of Medicine*, which appeared in the June number:—"We have had, to-day, (26th May,) an opportunity of seeing Dr. Tyler Smith introducee, with ease and rapidity, a fine whalebone bougie into the Fallopian tube of an unopened uterus. By means of a hollow silver tube, suitably curved at the distal end, the point of the whalebone instrument was conveyed to the cornu of the uterus, and was then made to pass into the tube."

7, Bolton-street, Piccadilly, June, 1849.



